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OPERATIONAL TEST AND EVALUATION

MB-2A BOMB BANDS

MARCH 1963

HEADQUARTERS
TACTICAL AIR COMMAND
United States Air Force
Langley Air Force Base, Virginia

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Operational Test and Evaluation
MB-2A Bomb Bands

Publication Review

This report has been reviewed and is approved

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Major General, USAF
Deputy for Operations

HEADQUARTERS
TACTICAL AIR COMMAND
United States Air Force
Langley Air Force Base, Virginia

FOREWORD

TAC Test 62-58, MB-2A Bomb Bands, was conducted by the Weapons Section, 4510th Combat Crew Training Group, 4510th Combat Crew Training Wing, Luke Air Force Base, Arizona, in accordance with AFR 80-14 and TACR 80-1.

Individuals responsible for actual conduct of the test and preparation of this final report are:

Project Officer	Captain W. D. Druen, Jr.
TAC Test Supervisor	Capt B. G. Vinson, Hq TAC

ABSTRACT

This test was conducted to determine the suitability of the MB-2A bomb bands on the B-37K-1 bomb rack. Results of the test showed the MB-2A bomb bands to be compatible with the B-37K-1 bomb rack for all modes of delivery. Ballistic tables obtained from Eglin, though not conclusively tested, appeared to be correct. An increase of washer thickness should be used in future fabrication to prevent the possibility of one end of the bomb band from slipping out of the MA-4A bomb shackle in the B-37K-1 bomb rack.

The possibility of increased inadvertent releases when using these bands on the B-37K-1 bomb rack will be more fully evaluated during continued training with these banded MB-2A bombs.

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1. BACKGROUND. The MB-2A miniature free fall bomb was designed to fit inside the MN-1A dispenser. Aircraft not able to carry the MN-1A dispenser have previously been using the MK-76 bomb on the B-37K-1 bomb rack. A short supply of the MK-76 bomb has required a method to fit the MB-2A bomb on the B-37K-1 bomb rack. SAAMA manufactured 100 bands to attach the MB-2A bomb to the B-37K-1 bomb rack.

2. DESCRIPTION OF TEST ITEM. The MB-2A bomb band is a metal strip with washers on each end (see Figure 1). The metal band fits around the MB-2A bomb and is attached to the B-37K-1 bomb rack (see Figure 2). The band releases at the same time as the bomb.

3. PURPOSE OF THE TEST. To determine the suitability of the MB-2A bomb band for use with the B-37K-1 bomb rack.

4. SCOPE OF THE TEST. To evaluate the following areas:

a. Safe carriage and proper release of the MB-2A bombs on the B-37K-1 bomb rack at the normal carriage speed for this type practice bomb.

b. Prepare proposed checklists for proper loading, to include indications for optimum tightness of sway bolts, based on the formal in T. O. 1F-100D-CL-16-2-1.

c. Change in ballistics of the MB-2A bomb without the ejection force of the MN-1A dispenser.

5. CONCLUSIONS AND RECOMMENDATIONS.

a. Conclusions:

(1) The MB-2A bomb band is suitable for use with the B-37K-1 bomb rack. An increase in the width of the washers on each end of the band would prevent the possibility of one end slipping out of the bomb rack.

(2) The MB-2A bomb can be safely carried and released from the B-37K-1 bomb rack at all normal carriage speeds for this type practice bomb.

(3) The MB-2A bomb band requires more time for installation on the B-37K-1 bomb rack than the MK-76 lug suspension system.

(4) Ballistic data supplied by APGC on the MB-2A bomb without the ejection force appears to be correct but, due to the small number of drops in the varying delivery modes, a positive conclusion cannot be drawn.

Figure 1

Figure 2

b. Recommendations:

(1) That the width of the washers used in the original bands be changed from 1/16" to 3/32".

(2) That the improved band be adopted for use with the MB-2A bomb on the B-37K-1 bomb rack.

(3) That a sufficient quantity of the bands be procured and be made available when the level of the MK-76 bomb drops to a low level of supply.

6. TEST RESULTS AND DISCUSSION.

a. Test Environment and Procedures. Physical testing on this project was accomplished at Luke Air Force Base, Arizona and its associated weapons ranges. F-100C aircraft were used to conduct the test for both conventional and nuclear events. Test sorties were flown on normally scheduled missions by instructor pilots of the 4510th Combat Crew Training Group. MB-2A bomb ballistic data was received from the Air Proving Ground Center, Eglin Air Force Base, Florida. One armament loading crew was used to load all MB-2A bombs on the B-37K-1 bomb rack.

b. Test Results and Analysis:

(1) Conventional Deliveries. All bombs dropped conventionally were spotted. A total of 96 bombs were used during this phase. Sixty-four (64) bombs were dropped using a high angle dive delivery and 32 bombs were dropped using a skip bomb delivery. The MB-2A bomb requires less sight depression due to its clean shape. The bomb band separates at release, therefore no drag is added to the bomb.

(a) No early or late releases were noted during the conventional delivery phase. Bomb carriage was stable at speeds up to 475 KIAS during this phase.

(b) Ballistic data appeared to be accurate during this phase.

7. INSTALLATION OF TEST ITEMS.

a. The checklist T.O.-100D-CL-16-2-1 originally directed in the test order was not used for the format as a loading checklist. T.O. 100C-CL-33-1-1-14, type B-37K-1 bomb container, was used since this checklist was more closely associated. Page 6 of this checklist was revised for the MB-2A bomb with suspension band and labeled Page 6a (see Appendix 1, Loading (MB-2A W/Band).

b. The loading procedure for the MB-2A bomb on the B-37K-1 bomb rack differs in two aspects from the MK-76 bomb.

(1) The band is harder to keep in place than a lug when locking the bomb in the shackle. The operation is easier and faster with two men loading each bomb. Care must be taken to face the washers flush with each other (see Figure 3). This prevents contact of the twisted portion of tne band which would cause the ends to spread in the shackle.

(2) Torquing of the sway braces on the bomb must be firm. With the MK-76 bomb, a small amount of play is desired. The MB-2A bomb should be rigid but care must be taken not to tighten it nose up or down; nor should it be cantered on the rack.

8. DEFICIENCIES. An increase in washer width is desirable although no change was made during the test. The present width, in several cases, allowed one end of the bomb band to slip out of the shackle after the shackle had been locked and prior to bomb being torqued. No inadvertent releases occurred in the air because, after the bomb was torqued rigid, the end of the bands stayed firm. If the width of washer is increased, care should be taken to make sure that approximately 1/16" clearance still exists between side of washers and rack hook.

Figure 3

DISTRIBUTION

Hq USAF	
AFORQ-TA	2
AFXOP	2
AFSME	2
AFSSA	2
AFDIA-AP-1K2	2
USAFE	
OTS	5
OTREQ	2
PACAF	
PFORQ	5
ASD	
TACSO-A	2
AFLC	
MCFLC	2
APGC	
TACLO-P	2
ESD	
TACSO-E	2
9 AF	2
12 AF	2
19 AF	2
USAF TARC	2
17 AF	3
5 AF	3
13 AF	3
4510 CCr Tng Wg	10
4520 CCr Tng Wg	
TFW-TTS	2
TFW-R&D	2
ASTIA	
TIS	2
AU	
AUL3T	2
AGOS	
N-8	2
AFSC	2
BSD	
TACSO-B	2
AFSWC	
TACLO-S	2
USAF SAWC	2
Det 4, ASD	2
7272 ABW	2
BUWEPS	2
SAAMA	5
OOAMA	2
Chief, National Guard Bureau Washington 25, DC	2
Hq TAC	
SEG	2
DMEM	2
DOPL	2
DPLPR	2
DCRB	2
DMS	2
OIH	2
DCE	2
OA	2
OS	2
DOOS	2
DORF	2
DOAA	2
DITA	2
LM	2
LAR	2
LN	4
DORQ-T	10

APPENDIX A

Loading Checklist MB-2A Bomb with Band (B-37K-1 Rack)

LOADING CHECKLIST MB-2A BOMB WITH BAND (B-37K-1 RACK)

1. Bend band around bomb and fit post on band into holes on bomb.

NOTE

MAKE SURE WASHERS ON ENDS OF BAND FIT TOGETHER FLUSH AND THAT NECK OF BAND DOES NOT TOUCH.

2. Raise bomb until lugs match hooks.

3. Cock bomb rack. Rack fully cocked.

4. Shake bomb. Check sear for 50 - 95% engagement.

NOTE

CHECK FOR APPROXIMATELY 1/16 INCH CLEARANCE BETWEEN SIDE OF WASHERS AND RACK HOOK. THE WASHERS MUST NOT BIND ON THE RACK HOOK.

5. Tighten sway braces and locknuts.

NOTE

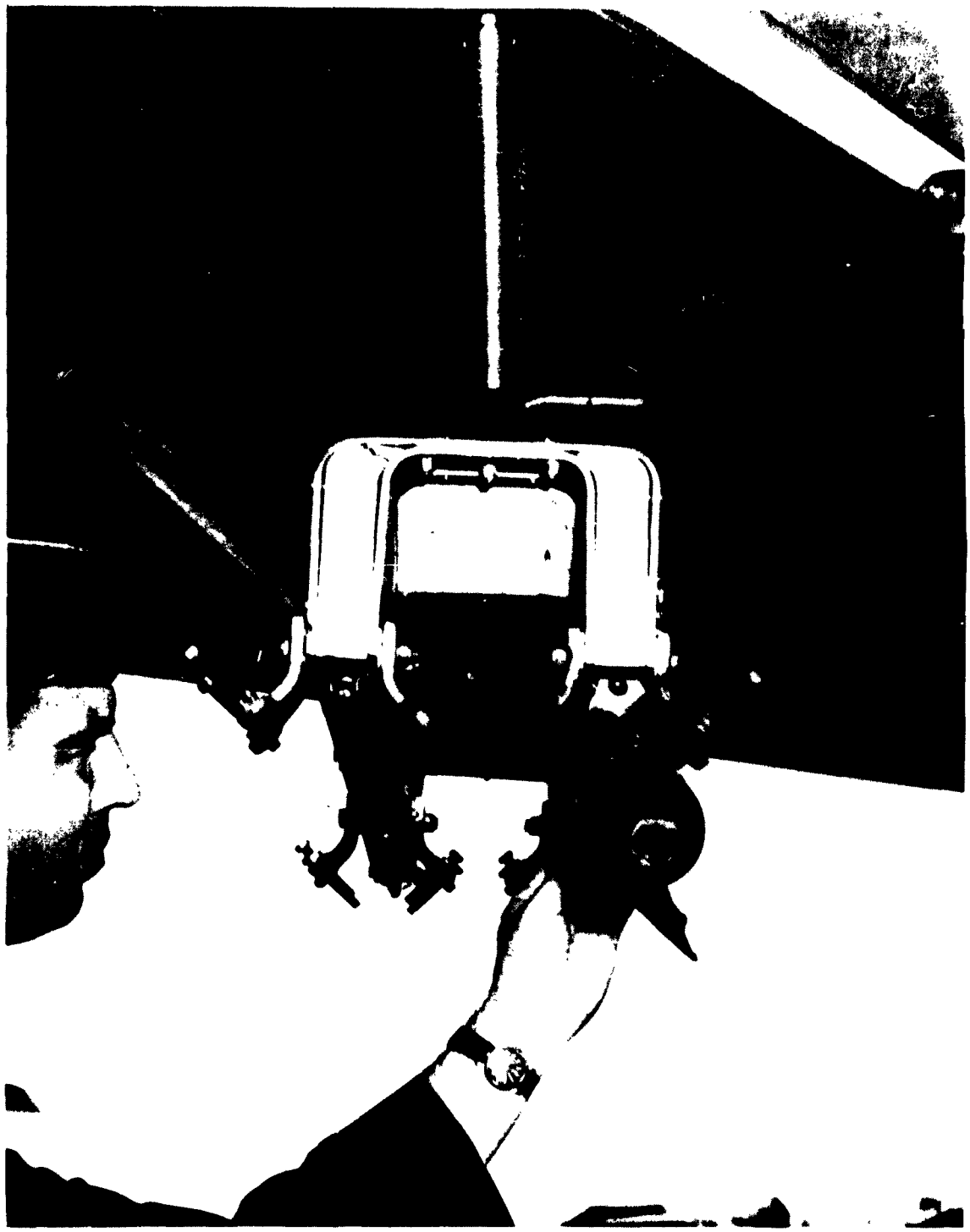
TIGHTEN SWAY BRACES SO THAT BOMB IS RIGID ON RACK. ASSURE THAT BOMB IS STRAIGHT AND LEVEL ON RACK.

6. Repeat steps 1 thru 5 for each store.

7. Remove all tools and equipment from area.

APPENDIX B

Bomb and Band on B-37K-1 Rack Prior to Torquing



APPENDIX C

Side View Loaded

NOSE

APPENDIX D

Front View Loaded